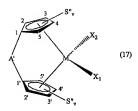
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wherein A', M, X₁ and X₂ are as previously defined. Substituents S"_v are independently defined as S" in equations 8-9 where the subscript "v" denotes the carbon atom on the Co-ring to which the substituent is bonded.

[00191] Preferably metallocene precursors for producing poly- alphaolefins having enhanced isotactic character are those of Equation 17 where S", are
independently chosen such that the metallocene framework 1) has no plane of
symmetry containing the metal center, and 2) has a C₂-axis of symmetry through
the metal center. Such complexes, such as rac-Mc₂Si(indenyl)₂ZrMc₂ and racMc₂Si(indenyl)₂HfMc₂ are well known in the art and generally produce isotactic
polymers with higher degrees of stereoregularity than the less symmetric chiral
systems. Likewise another preferred class of transition metal compounds that can
produce isotactic polymers useful in this invention are those
monocyclopentadienyl catalysts disclosed in U.S. Pat. No. 5,026,798, which is
incorporated by reference herein.

[00192] Preferred chiral racemic metallocene compounds which, according to the present invention, provide catalyst systems which are specific to the production of isotactic poly- alpha-olefins include the racemic versions of: dimethylsilylbis(indenyl) zirconium dichloride, dimethylsilylbis(indenyl) zirconium dimethyl, diphenylsilylbis(indenyl) zirconium dichloride.

diphenylsilylbis(indenyl) zirconjum dimethyl, methylphenylsilylbis(indenyl) zirconium dichloride. methylphenylsilylbis(indenyl) zirconium dimethyl, ethylenebis(indenyl) zirconium dichloride, ethylenebis(indenyl) zirconium dimethyl, methylenebis(indenyl) zirconium dichloride, methylenebis(indenyl) zirconium dimethyl, dimethylsilylbis(indenyl) hafnium dichloride, dimethylsilylbis(indenyl) hafnium dimethyl, diphenylsilylbis(indenyl) hafnium dichloride, diphenylsilylbis(indenyl) hafnium dimethyl, methylphenylsilylbis(indenyl) hafnium dichloride, methylphenylsilylbis(indenyl) hafnium dimethyl, ethylenebis(indenyl) hafnium dichloride, ethylenebis(indenyl) hafnium dimethyl, methylenebis(indenyl) hafnium dichloride, methylenebis(indenyl) hafnium dimethyl, dimethylsilylbis(tetrahydroindenyl) zirconium dichloride, dimethylsilylbis(tetrahydroindenyl) zirconium dimethyl, diphenylsilylbis(tetrahydroindenyl) zirconium dichloride, diphenylsilylbis(tetrahydroindenyl) zirconium dimethyl, methylphenylsilylbis(tetrahydroindenyl) zirconium dichloride, methylphenylsilylbis(tetrahydroindenyl) zirconium dimethyl, ethylenebis(tetrahydroindenyl) zirconium dichloride, ethylenebis(tetrahydroindenyl) zirconium dimethyl, methylenebis(tetrahydroindenyl) zirconium dichloride, methylenebis(tetrahydroindenyl) zirconium dimethyl, dimethylsilylbis(tetrahydroindenyl) hafnium dichloride, dimethylsilylbis(tetrahydroindenyl) hafnium dimethyl, diphenylsilylbis(tetrahydroindenyl) hafnium dichloride, diphenylsilylbis(tetrahydroindenyl) hafnium dimethyl. methylphenylsilylbis(tetrahydroindenyl) hafnium dichloride, methylphenylsilylbis(tetrahydroindenyl) hafnium dimethyl. ethylenebis(tetrahydroindenyl) hafnium dichloride, ethylenebis(tetrahydroindenyl) hafnium dimethyl, methylenebis(tetrahydroindenyl) hafnium dichloride, methylenebis(tetrahydroindenyl) hafnium dimethyl, dimethylsilylbis(2methylindenyl) zirconium dichloride, dimethylsilylbis(2-methylindenyl) zirconium dimethyl, diphenylsilylbis(2-methylindenyl) zirconium dichloride. diphenylsilylbis(2-methylindenyl) zirconium dimethyl, methylphenylsilylbis(2methylindenyl) zirconium dichloride, methylphenylsilylbis(2-methylindenyl) zirconium dimethyl, ethylenebis(2-methylindenyl) zirconium dichloride. ethylenebis(2-methylindenyl) zirconium dimethyl, methylenebis(2-methylindenyl) zirconium dichloride, methylenebis(2-methylindenyl) zirconium dimethyl. dimethylsilylbis(2-methylindenyl) hafnium dichloride, dimethylsilylbis(2methylindenyl) hafnium dimethyl, diphenylsilylbis(2-methylindenyl) hafnium dichloride, diphenylsilylbis(2-methylindenyl) hafnium dimethyl, methylphenylsilylbis(2-methylindenyl) hafnium dichloride. methylphenylsilylbis(2-methylindenyl) hafnium dimethyl, ethylenebis(2methylindenyl) hafnium dichloride, ethylenebis(2-methylindenyl) hafnium dimethyl, methylenebis(2-methylindenyl) hafnium dichloride, methylenebis(2methylindenyl) hafnium dimethyl, rac-dimethylsilylbis(2-methyl-4phenylindenyl) zirconium dichloride, diphenylsilylbis(2-methyl-4-phenylindenyl) zirconium dimethyl, diphenylsilylbis(2-methyl-4-phenylindenyl) zirconium dichloride, diphenylsilylbis(2-methyl-4-phenylindenyl) zirconium dimethyl, methylphenylsilylbis(2-methyl-4-phenylindenyl) zirconium dichloride. methylphenylsilylbis(2-methyl-4-phenylindenyl) zirconium dimethyl, ethylenebis(2-methyl-4-phenylindenyl) zirconium dichloride, ethylenebis(2methyl-4-phenylindenyl) zirconium dimethyl, methylenebis(2-methyl-4phenylindenyl) zirconium dichloride, methylenebis(2-methyl-4-phenylindenyl) zirconium dimethyl, dimethylsilylbis(2-methyl-4-phenylindenyl) hafnium dichloride, dimethylsilylbis(2-methyl-4-phenylindenyl) hafnium dimethyl, diphenylsilylbis(2-methyl-4-phenylindenyl) hafnium dichloride. diphenylsilylbis(2-methyl-4-phenylindenyl) hafnium dimethyl, methylphenylsilylbis(2-methyl-4-phenylindenyl) hafnium dichloride. methylphenylsilylbis(2-methyl-4-phenylindenyl) hafnium dimethyl. ethylenebis(2-methyl-4-phenylindenyl) hafnium dichloride, ethylenebis(2-methyl4-phenylindenyl) hafnium dimethyl, methylenebis(2-methyl-4-phenylindenyl) hafnium dichloride, methylenebis(2-methyl-4-phenylindenyl) hafnium dimethyl, dimethylsilylbis(4,7-dimethylindenyl) zirconium dichloride, dimethylsilylbis(4,7dimethylindenyl) zirconium dimethyl, diphenylsilylbis(4,7-dimethylindenyl) zirconium dichloride, diphenylsilylbis(4,7-dimethylindenyl) zirconium dimethyl, methylphenylsilylbis(4,7-dimethylindenyl) zirconium dichloride. methylphenylsilylbis(4,7-dimethylindenyl) zirconium dimethyl, ethylenebis(4,7dimethylindenyl) zirconium dichloride, ethylenebis(4,7-dimethylindenyl) zirconium dimethyl, methylenebis(4,7-dimethylindenyl) zirconium dichloride, methylenebis(4,7-dimethylindenyl) zirconium dimethyl, dimethylsilylbis(4,7dimethylindenyl) hafnium dichloride, dimethylsilylbis(4,7-dimethylindenyl) hafnium dimethyl, diphenylsilylbis(4,7-dimethylindenyl) hafnium dichloride, diphenylsilylbis(4,7-dimethylindenyl) hafnium dimethyl. methylphenylsilyibis(4,7-dimethylindenyl) hafnium dichloride, methylphenylsilylhis(4.7-dimethylindenyl) hafnium dimethyl, ethylenebis(4.7dimethylindenyl) hafnium dichloride, ethylenebis(4,7-dimethylindenyl) hafnium dimethyl, methylenebis(4,7-dimethylindenyl) hafnium dichloride, methylenebis(4.7-dimethylindenyl) hafnium dimethyl, dimethylsilylbis(2-methyl-4-nanthylindenyl) zirconium dichloride, dimethylsilylbis(2-methyl-4napthylindenyl) zirconium dimethyl, diphenylsilylbis(2-methyl-4-napthylindenyl) zirconium dichloride, diphenylsilylbis(2-methyl-4-napthylindenyl) zirconium dimethyl, methylphenylsilylbis(2-methyl-4-napthylindenyl) zirconium dichloride, methylphenylsilylbis(2-methyl-4-nanthylindenyl) zirconium dimethyl. ethylenebis(2-methyl-4-napthylindenyl) zirconium dichloride, ethylenebis(2methyl-4-nanthylindenyl) zirconium dimethyl, methylenebis(2-methyl-4nanthylindenyl) zirconium dichloride, methylenebis(2-methyl-4-nanthylindenyl) zirconium dimethyl, dimethylsilylbis(2-methyl-4-napthylindenyl) hafnium dichloride, dimethylsilylbis(2-methyl-4-napthylindenyl) hafnium dimethyl, diphenylsilylbis(2-methyl-4-napthylindenyl) hafnium dichloride, diphenylsilylbis(2-methyl-4-napthylindenyl) hafnium dimethyl,

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methylphenylsilylbis(2-methyl-4-napthylindenyl) hafnium dichloride, methylphenylsilylbis(2-methyl-4-napthylindenyl) hafnium dimethyl, ethylenebis(2-methyl-4-napthylindenyl) hafnium dichloride, ethylenebis(2methyl-4-napthylindenyl) hafnium dimethyl, methylenebis(2-methyl-4napthylindenyl) hafnium dichloride, methylenebis(2-methyl-4-napthylindenyl) hafnium dimethyl, dimethylsilylbis(2,3-dimethylcyclopentadienyl) zirconium dichloride, dimethylsilylbis(2,3-dimethylcyclopentadienyl) zirconium dimethyl, diphenylsilylbis(2,3-dimethylcyclopentadienyl) zirconium dichloride, diphenylsilylbis(2.3-dimethylcyclopentadienyl) zirconium dimethyl. methylphenylsilylbis(2,3-dimethylcyclopentadienyl) zirconium dichloride, methylphenylsilylbis(2.3-dimethylcyclopentadienyl) zirconium dimethyl. ethylenebis(2,3-dimethyleyclopentadienyl) zirconium dichloride, ethylenebis(2,3dimethylcyclopentadienyl) zirconium dimethyl, methylenebis(2,3dimethylcyclopentadienyl) zirconium dichloride, methylenebis(2,3dimethylcyclopentadienyl) zirconium dimethyl, dimethylsilylbis(2,3dimethylcyclopentadienyl) hafnium dichloride, dimethylsilylbis(2,3 dimethylcyclopentadienyl) hafnium dimethyl, diphenylsilylbis(2.3dimethylcyclopentadienyl) hafnium dichloride, diphenylsilylbis(2,3dimethylcyclopentadienyl) hafnium dimethyl, methylphenylsilylbis(2,3dimethylcyclopentadienyl) hafnium dichloride, methylphenylsilylbis(2,3dimethylcyclopentadienyl) hafnium dimethyl, ethylenebis(2,3dimethylcyclopentadienyl) hafnium dichloride, ethylenebis(2,3dimethylcyclopentadienyl) hafnium dimethyl, methylenebis(2,3dimethylcyclopentadienyl) hafnium dichloride, methylenebis(2,3dimethylcyclopentadienyl) hafnium dimethyl, dimethylsilvlbis(3trimethylsilylcyclopentadienyl) zirconium dichloride, dimethylsilylbis(3trimethylsilylcyclopentadienyl) zirconium dimethyl, diphenylsilylbis(3trimethylsilylcyclopentadienyl) zirconium dichloride, diphenylsilylbis(3trimethylsilylcyclopentadienyl) zirconium dimethyl, methylphenylsilylbis(3trimethylsilylcyclopentadienyl) zirconium dichloride, methylphenylsilylbis(3-

dichloride:

trimethylsilylcyclopentadienyl) zirconium dimethyl, ethylenebis(3trimethylsilylcyclopentadienyl) zirconium dichloride, ethylenebis(3trimethylsilylcyclopentadienyl) zirconium dimethyl, methylenebis(3trimethylsilylcyclopentadienyl) zirconium dichloride, methylenebis(3trimethylsilylcyclopentadienyl) zirconium dimethyl, dimethylsilylbis(3trimethylsilylcyclopentadienyl) hafnium dichloride, dimethylsilylbis(3trimethylsilylcyclopentadienyl) hafnium dimethyl, diphenylsilylbis(3trimethylsilylcyclopentadienyl) hafnium dichloride, diphenylsilylbis(3trimethylsilylcyclopentadienyl) hafnium dimethyl, methylphenylsilylbis(3trimethylsilylcyclopentadienyl) hafnium dichloride, methylphenylsilylbis(3trimethylsilylcyclopentadienyl) hafnium dimethyl, ethylenebis(3trimethylsilylcyclopentadienyl) hafnium dichloride, ethylenebis(3trimethylsilylcyclonentadienyl) hafnium dimethyl, methylenebis(3trimethylsilylcyclopentadienyl) hafnium dichloride, methylenebis(3trimethylsilylcyclopentadienyl) hafnium dimethyl. dimethylsiladiyl(2-methyl, 4-[3',5'-di-tbutylphenyllindenyl),zirconium dichloride; dimethylsiladiyl(2-ethyl, 4-[3',5'-di-tbutylphenyllindenyl),zirconium dichloride; dimethylsiladiyl(2-n-propyl, 4-[3',5'-di-tbutylphenyl]indenyl),zirconium

dimethylsiladiyl(2-iso-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dichloride:

dimethylsiladiyl(2-n-butyl, 4-[3',5'-di-tbutylphenyl]indenyl);zirconium dichloride; dimethylsiladiyl(2-iso-butyl, 4-[3',5'-di-tbutylphenyl]indenyl);zirconium dichloride;

dimethylsiladiyl(2-sec-butyl, 4-[3',5'-di-tbutylphenyl]indenyl),zirconium dichloride;

dimethylsiladiyl(2-tert-butyl, 4-[3',5'-di-tbutylphenyl]jindenyl),zirconium dichloride:

dimethylsiladiyl(2-methyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂hafnium dichloride; dimethylsiladiyl(2-ethyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂hafnium dichloride; dimethylsiladiyl(2-n-propyl, 4-[3',5'-di-tbutylphenyl]indenyl) hafnium dimethylsiladiyl(2-iso-propyl, 4-[3',5'-di-tbutylphenyl]indenyl) hafnium dichloride:

dimethylsiladiyl(2-butyl, 4-[3',5'-di-tbutylphenyl]indenyl),hafnium dichloride;
9-silafluorendiyl(2-methyl, 4-[3',5'-di-tbutylphenyl]indenyl),zirconium dichloride;
9-silafluorendiyl(2-ethyl, 4-[3',5'-di-tbutylphenyl]indenyl),zirconium dichloride;
9-silafluorendiyl(2-n-propyl, 4-[3',5'-di-tbutylphenyl]indenyl),zirconium
dichloride;

 $9-sil a fluorendiyl (2-iso-propyl, \mbox{\bf 4-[3',5'-di-tbutylphenyl]} indenyl)_2 zirconium \mbox{\bf dichloride;}$

 $9-silafluorendiyl (2-n-butyl, 4-[3',5'-di-tbutylphenyl] indenyl)_z zirconium dichloride; \\ 9-silafluorendiyl (2-iso-butyl, 4-[3',5'-di-tbutylphenyl] indenyl)_z zirconium dichloride; \\ dichloride;$

 $9-silafluorendiyl (2-sec-butyl, 4-[3^{\prime},5^{\prime}-di-tbutylphenyl] indenyl)_{2} zirconium dichloride:$

 $9-sil a fluorendiyl (2-tert-butyl, 4-[3',5'-di-tbutylphenyl] indenyl)_z zirconium . \\ dichloride:$

9-silafluorendiyl(2-methyl, 4-[3',5'-di-tbutylphenyl]indenyl), hafnium dichloride; 9-silafluorendiyl(2-ethyl, 4-[3',5'-di-tbutylphenyl]indenyl), hafnium dichloride; 9-silafluorendiyl(2-n-propyl, 4-[3',5'-di-tbutylphenyl]indenyl), hafnium dichloride; 9-silafluorendiyl(2-iso-propyl, 4-[3',5'-di-tbutylphenyl]indenyl), hafnium dichloride; dichloride;

9-silafluorendiyl(2-n-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)_zhafnium dichloride; 9-silafluorendiyl(2-iso-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)_zhafnium dichloride; 9-silafluorendiyl(2-sec-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)_zhafnium dichloride; 9-silafluorendiyl(2-tert-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)_zhafnium dichloride;

dimethylsiladiyl(2-methyl, 4-[3',5'-di-tbutylphenyl]indenyl),zirconium dimethyl; dimethylsiladiyl(2-ethyl, 4-[3',5'-di-tbutylphenyl]indenyl),zirconium dimethyl; dimethylsiladiyl(2-n-propyl, 4-[3',5'-di-tbutylphenyl]indenyl),zirconium dimethyl; dimethylsiladiyl(2-iso-propyl, 4-[3',5'-di-tbutylphenyl]indenyl),zirconium dimethyl:

dimethylsiladiyl(2-n-butyl, 4-[3',5'-di-butylphenyl]indenyl),zirconium dimethyl; dimethylsiladiyl(2-iso-butyl, 4-[3',5'-di-butylphenyl]indenyl),zirconium dimethyl; dimethylsiladiyl(2-sec-butyl, 4-[3',5'-di-butylphenyl]indenyl),zirconium dimethyl;

dimethylsiladiyl(2-tert-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dimethyl;

 $\label{limit} dimethylsiladiyl(2-methyl, 4-[3',5'-di-tbutylphenyl]indenyl)_phafnium dimethyl;\\ dimethylsiladiyl(2-ethyl, 4-[3',5'-di-tbutylphenyl]indenyl)_phafnium dimethyl;\\ dimethylsiladiyl(2-n-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)_phafnium dimethyl;\\ dimethylsiladiyl(2-iso-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)_phafnium dimethyl;\\ dimethylsiladiyl(2-n-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)_phafnium dimethyl;\\ dimethylsiladiyl(2-iso-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)_phafnium dimethyl;\\ dimethylsiladiyl(2-sec-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)_phafnium dimethyl;\\ dimethylsiladiyl(2-tert-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)_phafnium dimethyl;\\ 9-silafluorendiyl(2-methyl, 4-[3',5'-di-tbutylphenyl]indenyl)_pzirconium dimethyl;\\ 9-silafluorendiyl(2-n-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)_pzirconium dimethyl;\\ 9-silafluorendiyl(2-iso-propyl, 4-[3',5'-di-tbutylph$

- 9-silafluorendiyl(2-n-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)_zzirconium dimethyl; 9-silafluorendiyl(2-iso-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)_zzirconium dimethyl;
- 9-silafluorendiyl(2-sec-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dimethyl:
- 9-silafluorendiyl(2-tert-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dimethyl:
- 9-silafluorendiyl(2-methyl, 4-[3',5'-di-tbutylphenyl]indenyl), hafnium dimethyl; 9-silafluorendiyl(2-ethyl, 4-[3',5'-di-tbutylphenyl]indenyl), hafnium dimethyl;

9-silafluorendiyl(2-n-propyl, 4-[3',5'-di-tbutylphenyl]indenyl) 2hafnium dimethyl;

9-silafluorendiyl(2-iso-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)2hafnium dimethyl;

9-silafluorendiyl(2-n-butyl, 4-[3',5'-di-tbutylphenyl]indenyl);hafnium dimethyl;

9-silafluorendiyl(2-iso-butyl, 4-[3',5'-di-tbutylphenyl]indenyl), hafnium dimethyl;

9-silafluorendiyl(2-sec-butyl, 4-[3',5'-di-tbutylphenyl]indenyl),hafnium dimethyl;

9-silafluorendiyl(2-tert-butyl, 4-[3',5'-di-tbutylphenyl]indenyl),hafnium dimethyl;

dimethylsiladiyl(2-methyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl),zirconium

dichloride;

dimethylsiladiyl(2-ethyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂zirconium dichloride;

dimethylsiladiyl(2-n-propyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl),zirconium diehloride:

dimethylsiladiyl(2-iso-propyl, 4-[3',5'-bis-

trifluoromethylphenyl]indenyl)2zirconium dichloride;

dimethylsiladiyl(2-n-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl),zirconium dichloride:

dimethylsiladiyl(2-iso-butyl, 4-[3',5'-bis-

trifluoromethylphenyl]indenyl),zirconium dichloride;

dimethylsiladiyl(2-sec-butyl, 4-[3'.5'-bis-

trifluoromethylphenyl]indenyl),zirconium dichloride;

dimethylsiladiyl(2-tert-butyl, 4-[3',5'-bis-

trifluoromethylphenyllindenyl),zirconium dichloride;

dimethylsiladiyl(2-methyl, 4-[3³,5³-bis-trifluoromethylphenyl]jindenyl)₂hafnium dichloride;

dimethylsiladiyl(2-ethyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂hafnium dichloride;

dimethylsiladiyl(2-n-propyl, 4-[3',5'-bis- trifluoromethylphenyl]indenyl),hafinium dichloride;

dimethylsiladiyl(2-iso-propyl, 4-[3',5'-bis-

trifluoromethylphenyl]indenyl);hafnium dichloride;

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dimethylsiladiyl(2-n-butyl, 4-[3',5'-bis- trifluoromethylphenyl]indenyl),hafnium dichloride:

dimethylsiladiyl(2-iso-butyl, $4-[3',5'-bis-trifluoromethylphenyl]_indenyl)_z$ hafnium dichloride:

dimethylsiladiyl(2-sec-butyl, 4-[3',5'-bis- triftuoromethylphenyl]indenyl),hafinium dichloride:

dimethylsiladiyl(2-tert-butyl, 4-[3',5'-bis- trifluoromethylphenyl]indenyl),hafnium dichloride;

9-silafluorendiyl
(2-methyl, 4-[3',5'-bis-trifluoromethylphenyl]
jndenyl) $_2$ zirconium dichloride;

dimethylsiladiyl(2-ethyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂hafnium dichloride:

9-silafluorendiyl(2-n-propyl, 4-[3',5'-bis-

trifluoromethylphenyl]indenyl)2zirconium dichloride;

9-silafluorendiyl(2-iso-propyl, 4-[3',5'-bis-

trifluoromethylphenyl]indenyl),zirconium dichloride;

9-silafluorendiyl(2-n-butyl, 4-[3',5'-bis- trifluoromethylphenyl]indenyl)₂zirconium dichloride:

9-silafluorendiyl(2-iso-butyl, 4-[3',5'-bis-

trifluoromethylphenyl]indenyl),zirconium dichloride;

9-silafluorendiyl(2-sec-butyl, 4-[3',5'-bis-

trifluoromethylphenyllindenyl), zirconium dichloride:

9-silafluorendiyl(2-tert-butyl, 4-[3',5'-bis-

trifluoromethylphenyllindenyl), zirconium dichloride:

9-silafluorendiyl(2-methyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl),hafnium dichloride:

9-silafluorendiyl(2-ethyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl),hafnium dichloride:

9-silafluorendiyl(2-n-propyl, 4-[3',5'-bis- trifluoromethylphenyl]indenyl)₂ hafnium dichloride: 9-silafluorendiyl(2-iso-propyl, 4-[3',5'-bis- trifluoromethylphenyl]indenyl), hafnium dichloride:

9-silafluorendiyl(2-n-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl),hafnium dichloride:

9-silafluorendiyl(2-iso-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂hafnium dichloride:

9-silafluorendiyl(2-sec-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl),hafnium dichloride;

 $9-silafluorendiyl (2-text-butyl, 4-[3',5'-bis-trifluoromethylphenyl] indenyl)_2 hafnium dichloride: \\$

dimethylsiladiyl(2-methyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl);zirconium dimethyl:

dimethylsiladiyl(2-ethyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂zirconium dimethyl:

dimethylsiladiyl(2-n-propyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl),zirconium dimethyl:

dimethylsiladiyl(2-iso-propyl, 4-[3',5'-bis-

trifluoromethylphenyllindenyl),zirconium dimethyl;

dimethylsiladiyl(2-n-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl),zirconium dimethyl:

dimethylsiladiyl(2-iso-butyl, 4-[3',5'-bis-

trifluoromethylphenyl]indenyl),zirconium dimethyl;

dimethylsiladiyl(2-sec-butyl, 4-[3',5'-bis-

trifluoromethylphenyllindenyl), zirconium dimethyl;

dimethylsiladiyl(2-tert-butyl, 4-[3',5'-bis-

trifluoromethylphenyllindenyl), zirconium dimethyl;

dimethylsiladiyl(2-methyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl), hafnium dimethyl;

dimethylsiladiyl(2-ethyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl),hafnium dimethyl;

dimethylsiladiyl(2-n-propyl, 4-[3',5'-bis- trifluoromethylphenyl]indenyl),hafinium dimethyl;

dimethylsiladiyl(2-iso-propyl, 4-[3',5'-bis-

trifluoromethylphenyl]indenyl),hafnium dimethyl;

 $\label{limited} dimethyl siladiyl (2-n-butyl, 4-[3',5'-bis-trifluoromethyl phenyl] indenyl), \\ hafnium \\ dimethyl;$

 $\label{limited} dimethyl siladiyl (2-iso-butyl, 4-[3',5'-bis-trifluoromethyl phenyl] indenyl), hafinium dimethyl;$

 $\label{limit} dimethyl siladiyl (2-see-butyl, 4-[3',5'-bis-trifluoromethylphenyl] indenyl) {\tt 2} hafnium dimethyl;$

dimethylsiladiyl(2-tert-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl),hafnium dimethyl;

9-silafluorendiyl(2-methyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂zirconium dimethyl;

dimethylsiladiyl(2-ethyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl);hafnium dimethyl;

9-silafluorendiyl(2-n-propyl, 4-[3',5'-bis-

trifluoromethylphenyl]indenyl),zirconium dimethyl;

9-silafluorendiyl(2-iso-propyl, 4-[3',5'-bis-

trifluoromethylphenyllindenyl)-zirconium dimethyl:

9-silafluorendiyl(2-n-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂zirconium dimethyl;

9-silafluorendiyl(2-iso-butyl, 4-[3',5'-bis-

trifluoromethylphenyl]indenyl),zirconium dimethyl;

9-silafluorendiyl(2-sec-butyl, 4-[3',5'-bis-

trifluoromethylphenyl]indenyl),zirconium dimethyl;

9-silafluorendiyl(2-tert-butyl, 4-[3',5'-bis-

trifluoromethylphenyl]indenyl),zirconium dimethyl;

9-silafluorendiyl(2-methyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl) 2hafnium dimethyl;

- 9-silafluorendiyl(2-ethyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl),hafnium dimethyl:
- 9-silafluorendiyl(2-n-propyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂ hafnium dimethyl;
- 9-silafluorendiyl(2-iso-propyl, 4-[3',5'-bis- trifluoromethylphenyl]indenyl)₂ hafnium dimethyl;
- 9-silafluorendiyl(2-n-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl),hafnium dimethyl;
- $9-silafluorendiyl (2-iso-butyl, 4-[3',5'-bis-trifluoromethylphenyl] indenyl)_2 hafnium dimethyl; \\$
- 9-silafluorendiyl(2-sec-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)2hafnium dimethyl:
- 9-silafluorendiyl(2-tert-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl);hafnium dimethyl:
- dimethylsiladiyl(2-ethyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dichloride:
- dimethylsiladiyl(2-n-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dichloride
- dimethylsiladiyl(2-iso-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dichloride:
- $\label{limit} \mbox{dimethylsiladiyl(2-n-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)}_{2} zirconium \\ \mbox{dichloride:}$
- dimethylsiladiyl(2-iso-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl),zirconium dichloride:
- dimethylsiladiyl(2-sec-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl),zirconium dichloride;
- dimethylsiladiyl(2-tert-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl),zirconium dichloride:
- dimethylsiladiyl(2-ethyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂hafnium dichloride:

- dimethylsiladiyl(2-n-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂hafnium dichloride:
- dimethylsiladiyl(2-iso-propyl, 4-[3',5'-di- iso-propylphenyl]indenyl) 2hafnium dichloride:
- dimethylsiladiyl(2-n-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂hafnium dichloride:
- dimethylsiladiyl(2-iso-butyl, 4-[3',5'-di- iso-propylphenyl]indenyl)₂hafnium dichloride:
- dimethylsiladiyl(2-sec-butyl, 4-[3 $^{\circ}$,5 $^{\circ}$ -di- iso-propylphenyl]indenyl) $_2$ hafnium dichloride:
- $\label{limit} dimethyl siladiyl (2-tert-butyl, 4-[3^{\circ},5^{\circ}-di-iso-propylphenyl] indenyl) {}_{2}hafnium diehloride:$
- 9-silafluorendiyl(2-ethyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dichloride:
- 9-silafluorendiyl(2-n-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dichloride:
- 9-silafluorendiyl(2-iso-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dichloride:
- 9-silafluorendiyl(2-n-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dichloride:
- $9-silafluorendiyl (2-iso-butyl, 4-[3',5'-di-iso-propylphenyl] indenyl)_z zirconium dichloride; \\$
- 9-silafluorendiyl(2-sec-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dichloride;
- $9-silafluorendiyl (2-tert-butyl, 4-[3^{\circ},5^{\circ}-di-iso-propylphenyl] indenyl)_{z} zirconium dichloride;$
- 9-silafluorendiyl(2-ethyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂hafnium dichloride:
- 9-silafluorendiyl(2-n-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂hafnium dichloride:

- 9-silafluorendiyl(2-iso-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl),hafnium dichloride;
- 9-silafluorendiyl(2-n-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂hafnium dichloride;
- 9-silafluorendiyl(2-iso-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂hafnium dichloride;
- 9-silafluorendiyl(2-sec-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂hafnium dichloride;
- 9-silafluorendiyl(2-tert-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl),hafnium dichloride;
- $\label{limit} dimethyls iladiyl (2-ethyl, 4-[3',5'-di-iso-propylphenyl] indenyl)_z zirconium \\ dimethyl;$
- $\label{limit} dimethyl siladiyl (2-u-propyl, 4-[3',5'-di-iso-propyl phenyl] indenyl)_{z} zirconium \\ dimethyl$
- $\label{limit} \mbox{dimethylsiladiyl(2-iso-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)}_{2} \mbox{zirconium dimethyl;}$
- $\label{limit} dimethylsiladiyl(2-n-butyl, 4-[3',5'-di-iso-propylphenyl] indenyl)_z zirconium \\ dimethyl:$
- dimethylsiladiyl(2-isobutyl, 4-[3',5'-di-iso-propylphenyl]indenyl),zirconium dimethyl;
- dimethylsiladiyl(2-sec-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl),zirconium dimethyl;
- dimethylsiladiyl(2-tert-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dimethyl;
- dimethylsiladiyl(2-ethyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂hafnium dimethyl; dimethylsiladiyl(2-n-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂hafnium dimethyl;
- dimethylsiladiyl(2-iso-propyl, 4-[3',5'-di- iso-propylphenyl]indenyl) 2hafnium dimethyl:

- dimethylsiladiyl(2-n-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂hafnium dimethyl:
- $\label{limit} dimethyl siladiyl (2-iso-butyl, 4-[3',5'-di-iso-propylphenyl] indenyl)_z zirconium \\ dimethyl;$
- dimethylsiladiyl(2-sec-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl),zirconium dimethyl;
- $\label{limited} dimethyl siladiyl (2-tert-butyl, 4-[3',5'-di-iso-propylphenyl] indenyl)_z zirconium \\ dimethyl;$
- 9-silafluorendiyl(2-ethyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dimethyl:
- 9-silafluorendiyl(2-n-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl);zirconium dimethyl;
- 9-silafluorendiyl(2-iso-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl);zirconium dimethyl:
- 9-silafluorendiyl(2-n-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dimethyl:
- 9-silafluorendiyl(2-iso-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl);zirconium dimethyl;
- 9-silafluorendiyl (2-sec-butyl, 4-[3',5'-di-iso-propylphenyl] indenyl), zirconium dimethyl;
- 9-silafluorendiyl(2-tert-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl),zirconium dimethyl;
- 9-silafluorendiyl(2-ethyl, 4-[3',5'-di-iso-propylphenyl]indenyl) 2hafnium dimethyl;
- 9-silafluorendiyl(2-n-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂hafnium dimethyl:
- 9-silafluorendiyl(2-iso-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂hafnium dimethyl:
- 9-silafluorendiyl(2-n-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl);hafnium dimethyl;

- 9-silafluorendiyl(2-iso-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂hafnium dimethyl:
- $9-silafluorendiyl (2-sec-butyl, 4-[3',5'-di-iso-propylphenyl] indenyl)_2 hafinium dimethyl; \\$
- 9-silafluorendiyl(2-tert-butyl, $4-[3',5'-di-iso-propylphenyl]indenyl)_2hafnium dimethyl;$
- dimethylsiladiyl(2-methyl, 4-[3',5'-di-phenylphenyl]jindenyl)₂zirconium dichloride:
- $\label{limited} dimethylsiladiyl(2-ethyl, 4-[3',5'-di-phenylphenyl])_{zzirconium}\ dichloride; \\ dimethylsiladiyl(2-n-propyl, 4-[3',5'-di-phenylphenyl])_{zzirconium}\ dichloride:$
- $\label{limit} \mbox{dimethylsiladiyl} (2\mbox{-iso-propyl}, 4\mbox{-}[3',5'\mbox{-}di\mbox{-}phenyl] \mbox{phenyl}] \mbox{indenyl})_2 zirconium \mbox{dichloride:}$
- dimethylsiladiyl(2-n-butyl, 4-[3',5'-di-phenylphenyl]
jindenyl) $_2$ zirconium dichloride:
- $\label{limit} dimethylsiladiyl (2-iso-butyl, 4-[3',5'-di-phenylphenyl] indenyl)_{2} zirconium \\ dichloride:$
- $\label{limit} dimethyl siladiyl (2-sec-butyl, 4-[3',5'-di-phenyl] indenyl)_{2} zirconium \\ dichloride;$
- dimethylsiladiyl(2-tert-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dichloride:
- $\label{limits} dimethylsiladiyl(2-methyl, 4-[3',5'-di-phenylphenyl])_hafnium dichloride;\\ dimethylsiladiyl(2-ethyl, 4-[3',5'-di-phenylphenyl]]indenyl)_hafnium dichloride;\\ dimethylsiladiyl(2-n-propyl, 4-[3',5'-di-phenylphenyl]]indenyl)_hafnium dichloride;\\ dimethylsiladiyl(2-iso-propyl, 4-[3',5'-di-phenylphenyl]]indenyl)_hafnium dichloride;\\ dichloride;$
- dimethylsiladiyl(2-n-butyl, 4-[3',5'-di-phenylphenyl]indenyl),hafnium dichloride; dimethylsiladiyl(2-iso-butyl, 4-[3',5'-di-phenylphenyl]indenyl),hafnium dichloride;

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dimethylsiladiyl(2-sec-butyl, 4-[3',5'-di-phenylphenyl]indenyl),hafnium dichloride:

- dimethylsiladiyl(2-tert-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂hafnium dichloride:
- 9-silafluorendiyl(2-methyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dichloride:
- 9-silafluorendiyl(2-ethyl, 4-[3',5'-di-phenylphenyl]);zirconium dichloride; 9-silafluorendiyl(2-n-propyl, 4-[3',5'-di-phenylphenyl]indenyl);zirconium dichloride:
- $9-silafluorendiyl (2-iso-propyl, 4-[3',5'-di-phenyl]phenyl] indenyl)_z zirconium dichloride:$
- 9-silafluorendiyl(2-n-butyl, 4-[3',5'-di-phenylphenyl]indenyl);zirconium dichloride:
- 9-silafluorendiyl(2-iso-butyl, 4-[3',5'-di-phenylphenyl)₂zirconium dichloride:
- 9-silafluorendiyl(2-sec-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dichloride:
- 9-silafluorendiyl(2-tert-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dichloride:
- 9-silafluorendiyl(2-methyl, 4-[3',5'-di-phenylphenyl]indenyl),hafnium dichloride; 9-silafluorendiyl(2-ethyl, 4-[3',5'-di-phenylphenyl]indenyl),hafnium dichloride; 9-silafluorendiyl(2-n-propyl, 4-[3',5'-di-phenylphenyl]indenyl),hafnium dichloride:
- 9-silafluorendiyl(2-iso-propyl, 4-[3',5'-di-phenylphenyl]indenyl);hafnium dichloride;
- 9-silafluorendiyl(2-n-butyl, 4-[3',5'-di-phenylphenyl]indenyl),hafnium dichloride; 9-silafluorendiyl(2-iso-butyl, 4-[3',5'-di-phenylphenyl]indenyl),hafnium
- dichloride:
- 9-silafluorendiyl(2-sec-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂hafnium dichloride;

9-silafluorendiyl(2-tert-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂hafnium dichloride:

 $\label{limiter} dimethylsiladiyl(2-methyl, 4-[3',5'-di-phenylphenyl]indenyl)_{z}irconium dimethyl; \\ dimethylsiladiyl(2-ethyl, 4-[3',5'-di-phenylphenyl]indenyl)_{z}irconium dimethyl; \\ dimethylsiladiyl(2-n-propyl, 4-[3',5'-di-phenylphenyl]indenyl)_{z}irconium dimethyl; \\ dimethylsiladiyl(2-n-propyl, 4-[3',5'-di-phenylphenyl]indenyl)_{z}irconium dimethyl; \\$

dimethylsiladiyl(2-iso-propyl, $4-[3',5'-di-phenylphenyl]indenyl)_zzirconium dimethyl;$

dimethylsiladiyl(2-n-butyl, 4-[3',5'-di-phenylphenyl]indenyl)_zzirconium dimethyl; dimethylsiladiyl(2-iso-butyl, 4-[3',5'-di-phenylphenyl]indenyl)_zzirconium dimethyl;

dimethylsiladiyl(2-sec-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dimethyl;

dimethylsiladiyl(2-tert-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dimethyl:

dimethylsiladiyl(2-methyl, 4-[3',5'-di-phenylphenyl]indenyl),hafnium dimethyl; dimethylsiladiyl(2-ethyl, 4-[3',5'-di-phenylphenyl]indenyl),hafnium dimethyl; dimethylsiladiyl(2-n-propyl, 4-[3',5'-di-phenylphenyl]indenyl),hafnium dimethyl; dimethylsiladiyl(2-iso-propyl, 4-[3',5'-di-phenylphenyl]indenyl),hafnium dimethyl;

dimethylsiladiyl(2-n-butyl, 4-[3',5'-di-phenylphenyl]indenyl),hafnium dimethyl; dimethylsiladiyl(2-iso-butyl, 4-[3',5'-di-phenylphenyl]indenyl),hafnium dimethyl; dimethylsiladiyl(2-ec-butyl, 4-[3',5'-di-phenylphenyl]indenyl),hafnium dimethyl; dimethylsiladiyl(2-tert-butyl, 4-[3',5'-di-phenylphenyl]indenyl),zirconium dimethyl; 9-silafluorendiyl(2-methyl, 4-[3',5'-di-phenylphenyl]indenyl),zirconium dimethyl; 9-silafluorendiyl(2-n-propyl, 4-[3',5'-di-phenylphenyl]indenyl),zirconium dimethyl; 9-silafluorendiyl(2-n-propyl, 4-[3',5'-di-phenylphenyl]indenyl),zirconium dimethyl;

9-silafluorendiyl(2-iso-propyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dimethyl;

- 9-silafluorendiyl(2-n-butyl, 4-[3',5'-di-phenylphenyl]indenyl)_zzirconium dimethyl; 9-silafluorendiyl(2-iso-butyl, 4-[3',5'-di-phenylphenyl]indenyl)_zzirconium dimethyl:
- 9-silafluorendiyl(2-sec-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dimethyl:
- 9-silafluorendiyl(2-tert-butyl, 4-[3',5'-di-phenylphenyl]indenyl);zirconium dimethyl;
- 9-silafluorendiyl(2-methyl, 4-[3',5'-di-phenylphenyl]indenyl),hafnium dimethyl; 9-silafluorendiyl(2-ethyl, 4-[3',5'-di-phenylphenyl]indenyl),hafnium dichloride; 9-silafluorendiyl(2-n-propyl, 4-[3',5'-di-phenylphenyl]indenyl),hafnium dimethyl; 9-silafluorendiyl(2-iso-propyl, 4-[3',5'-di-phenylphenyl]indenyl),hafnium dimethyl:
- 9-silafluorendiyl(2-n-butyl, 4-[3',5'-di-phenylphenyl]indenyl),hafnium dimethyl; 9-silafluorendiyl(2-iso-butyl, 4-[3',5'-di-phenylphenyl]indenyl),hafnium dimethyl; 9-silafluorendiyl(2-sec-butyl, 4-[3',5'-di-phenylphenyl]indenyl),hafnium dimethyl; 9-silafluorendiyl(2-tert-butyl, 4-[3',5'-di-phenylphenyl]indenyl),hafnium dimethyl; dimethylsiladiyl(2-methyl, 4-[3',5'-di-tbutylphenyl]indenyl),2-1-1,4-diphenyl-1,3-butadiene;
- dimethylsiladiyl(2-ethyl, 4-[3',5'-di-tbutylphenyl]indenyl) $_2$ η^4 -1,4-diphenyl-1,3-butadiene:
- dimethylsiladiyl(2-n-propyl, 4-[3',5'-di-tbutylphenyl]lindenyl) $_2$ η^4 -1,4-diphenyl-1.3-butadiene:
- dimethylsiladiyl(2-iso-propyl, 4-[3',5'-di-ibutylphenyl]indenyl) $_2$ η^4 -1,4-diphenyl-1.3-butadiene:
- dimethylsiladiyl(2-n-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂ η^4 -1,4-diphenyl-1,3-butadiene:
- dimethylsiladiyl(2-iso-butyl, 4-[3',5'-di-tbutylphenyl]indenyl) $_2$ η^4 -1,4-diphenyl-1.3-butadiene:
- dimethylsiladiyl(2-sec-butyl, 4-[3',5'-di-tbutylphenyl]indenyl) $_2$ η^4 -1,4-diphenyl-1.3-butadiene:

dimethylsiladiyl(2-tert-butyl, 4-[3',5'-di-tbutylphenyl]indenyl) $_2$ η^4 -1,4-diphenyl-1.3-butadiene:

dimethylsiladiyl(2-ethyl, 4-[3 $^{\circ}$,5 $^{\circ}$ -bis-trifluoromethylphenyl]indenyl)₂ η^4 -1,4-diphenyl-1,3-butadiene;

dimethylsiladiyl(2-n-propyl, 4-[3',5'-bis-trifluoromethylphenyl]jindenyl) $_2$ η^4 -1,4-diphenyl-1,3-butadiene;

dimethylsiladiyl(2-iso-propyl, 4-[3',5'-bis- trifluoromethylphenyl]indenyl) $_2$ η^4 -1,4-diphenyl-1,3-butadiene;

dimethylsiladiyl(2-n-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl) $_2$ η^4 -1,4-diphenyl-1.3-butadiene:

dimethylsiladiyl(2-iso-butyl, 4-[3',5'-bis-trifluoromethylphenyl]jindenyl) $_2$ η^4 -1,4-diphenyl-1.3-butadiene:

dimethylsiladiyl(2-sec-butyl, 4-[3',5'-bis-trifluoromethylphenyl]jindenyl)₂ η^4 -1,4-diphenyl-1.3-butadiene:

dimethylsiladiyl(2-tert-butyl, 4-[3 4 -5 4 -bis-trifluoromethylphenyl]indenyl) $_{2}$ η^{4} -1,4-diphenyl-1.3-butadiene:

dimethylsiladiyl(2-ethyl, 4-[3',5'-di-iso-propylphenyl]indenyl) $_2$ η^4 -1,4-diphenyl-1.3-butadiene:

dimethylsiladiyl(2-n-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl) $_2$ η^4 -1,4-diphenyl-1,3-butadiene;

dimethylsiladiyl(2-iso-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl) η^4 -1,4-diphenyl-1,3-butadiene;

dimethylsiladiyl(2-n-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl) $_2$ η^4 -1,4-diphenyl-1.3-butadiene:

dimethylsiladiyl(2-iso-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl) $_2$ η^4 -1,4-

diphenyl-1,3-butadiene;

dimethylsiladiyl(2-sec-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl) $_2$ η^4 -1,4-diphenyl-1,3-butadiene;

butadiene:

- dimethylsiladiyl(2-tert-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂ η^4 -1,4-diphenyl-1,3-butadiene;
- $\label{limited-dimensional} dimethylsiladiyl (2-methyl, 4-[3',5'-di-phenylphenyl] indenyl)_2 ~\eta^4-1, 4-diphenyl-1, 3-diphenyl-1, 3-diphenyl-$
- butadiene; $dimethylsiladiyl(2-ethyl, 4-[3',5'-di-phenylphenyl]indenyl)_2 \eta^4-1,4-diphenyl-1,3-$
- dimethylsiladiyl(2-n-propyl, 4-[3',5'-di-phenylphenyl]indenyl) $_2$ η^4 -1,4-diphenyl-1,3-butadiene;
- $\label{eq:dimethylsiladiyl} $$\dim ethylsiladiyl(2-iso-propyl, 4-[3',5'-di-phenylphenyl]] indenyl)_1, $\eta^4-1, 4-diphenyl-1, 3-butadiene;$
- dimethylsiladiyl(2-n-butyl, 4-[3',5'-di-phenylphenyl]indenyl) $_2$ η^4 -1,4-diphenyl-1,3-butadiene:
- dimethylsiladiyl(2-iso-butyl, 4-[3',5'-di-phenylphenyl]indenyl) $_2$ η^4 -1,4-diphenyl-1.3-butadiene:
- dimethylsiladiyl(2-sec-butyl, 4-[3',5'-di-phenylphenyl]indenyl), η^4 -1,4-diphenyl-1.3-butadiene:
- dimethylsiladiyl(2-tert-butyl, 4-[3',5'-di-phenylphenyl]indenyl), η^4 -1,4-diphenyl-1.3-butadiene:
- 9-silafluorendiyl(2-methyl, 4-[3',5'-di-tbutylphenyl]
indenyl), η^4 -1,4-diphenyl-1,3-butadiene;
- 9-silafluorendiyl(2-ethyl, 4-[3',5'-di-tbutylphenyl]indenyl), η^4 -1,4-diphenyl-1,3-butadiene;
- 9-silafluorendiyl(2-n-propyl, 4-[3',5'-di-tbutylphenyl]indenyl) $_2$ η^4 -1,4-diphenyl-1.3-butadiene:
- 9-silafluorendiyl(2-iso-propyl, 4-[3',5'-di-tbutylphenyl]indenyl), η⁴-1,4-diphenyl-1.3-butadiene:
- 9-silafluorendiyl(2-n-butyl, 4-[3',5'-di-tbutylphenyl]indenyl) $_2$ η^4 -1,4-diphenyl-1,3-butadiene:

- 9-silafluorendiyl(2-iso-butyl, 4-[3',5'-di-fbutylphenyl]indenyl) $_2$ η^4 -1,4-diphenyl-
- 1,3-butadiene;
- 9-silafluorendiyl(2-sec-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)2 n4-1,4-diphenyl-
- 1,3-butadiene;
- 9-silafluorendiyl(2-tert-butyl, 4-[3',5'-di-tbutylphenyl]indenyl), n4-1,4-diphenyl-
- 1.3-butadiene:
- 9-silafluorendiyl(2-ethyl, 4-[3',5'-bis-trifluoromethylphenyl]jindenyl) $_2$ η^4 -1,4-diphenyl-1,3-butadiene;
- 9-silafluorendiyl(2-n-propyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl) $_2$ η^4 -1,4-diphenyl-1,3-butadiene:
- 9-silafluorendiyl(2-iso-propyl, 4-[3',5'-bis- trifluoromethylphenyl]indenyl) $_2$ η^4 -1,4-diphenyl-1,3-butadiene;
- 9-silafluorendiyl(2-n-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl) $_2$ η^4 -1,4-diphenyl-1,3-butadiene;
- 9-silafluorendiyl(2-iso-butyl, 4-[3',5'-bis-trifluoromethylphenyl]]indenyl) $_2$ η^4 -1,4-diphenyl-1,3-butadiene;
- 9-silafluorendiyl(2-sec-butyl, 4-[3',5'-bis-trifluoromethylphenyl]jindenyl), η^4 -1,4-diphenyl-1,3-butadiene;
- 9-silafluorendiyl(2-tert-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl) $_2$ η^4 -1,4-diphenyl-1,3-butadiene;
- 9-silafluorendiyl(2-ethyl, 4-[3',5'-di-iso-propylphenyl]indenyl) $_2$ η^4 -1,4-diphenyl-1.3-butadiene;
- 9-silafluorendiyl(2-n-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl) $_2$ η^4 -1,4-diphenyl-1,3-butadiene:
- 9-silafluorendiyl(2-iso-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl) η^4 -1,4-diphenyl-1,3-butadiene;
- 9-silafluorendiyl(2-n-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl) $_2$ η^4 -1,4-diphenyl-1,3-butadiene;

- 9-silafluorendiyl(2-iso-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl) $_2$ η^4 -1,4-diphenyl-1.3-butadiene:
- 9-silafluorendiyl(2-sec-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl) $_2$ η^4 -1,4-diphenyl-1.3-butadiene:
- 9-silafluorendiyl(2-tert-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl) $_2$ η^4 -1,4-diphenyl-1,3-butadiene;
- 9-silafluorendiyl(2-methyl, 4-[3',5'-di-phenylphenyl]indenyl) $_2$ η^4 -1,4-diphenyl-1,3-butadiene:
- 9-silafluorendiyl(2-ethyl, 4-[3',5'-di-phenylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3hutadiene:
- 9-silafluorendiyl(2-n-propyl, 4-[3',5'-di-phenylphenyl]indenyl), 1,4-diphenyl-1,3-butadiene;
- 9-silafluorendiyl(2-iso-propyl, 4-[3',5'-di-phenylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;
- 9-silafluorendiyl(2-n-butyl, 4-[3',5'-di-phenylphenyl]indenyl) $_2$ η^4 -1,4-diphenyl-1.3-butadiene:
- 9-silafluorendiyl(2-iso-butyl, 4-[3',5'-di-phenylphenyl]indenyl) $_2$ η^4 -1,4-diphenyl1,3-butadiene:
- 9-silafluorendiyl(2-sec-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂ η^4 -1,4-diphenyl-1.3-butadiene;
- 9-silafluorendiyl(2-tert-butyl, 4-[3',5'-di-phenylphenyl]indenyl), η^4 -1,4-diphenyl-1,3-butadiene;
- dimethylamidoborane(2-methyl, 4-[3',5'-di-tbutylphenyl]indenyl),zirconium dichloride:
- $\label{limit} dimethylamidoborane (2-ethyl, 4-[3^{\circ},5^{\circ}-di-tbutylphenyl] indenyl)_{z} zirconium \\ dichloride;$
- dimethylamidoborane(2-n-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dichloride:
- dimethylamidoborane(2-iso-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dichloride;

dimethylamidoborane(2-n-butyl, 4-[3',5'-di-tbutylphenyl]indenyl),zirconium dichloride:

dimethylamidoborane(2-iso-butyl, 4-[3',5'-di-tbutylphenyl]jindenyl)₂zirconium dichloride:

dimethylamidoborane(2-sec-butyI, 4-[3',5'-di-tbutylphenyl]jindenyl)₂zirconium dichloride:

dimethylamidoborane(2-tert-butyl, 4-[3',5'-di-fbutylphenyl]indenyl)₂zirconium dichloride;

dimethylamidoborane(2-ethyl, 4-[3',5'-bis-

trifluoromethylphenyl]indenyl),zirconium dichloride;

dimethylamidoborane(2-n-propyl, 4-[3',5'-bis-

trifluoromethylphenyl]indenyl)2zirconium dichloride;

dimethylamidoborane(2-iso-propyl, 4-[3',5'-bis-

trifluoromethylphenyl]indenyl),zirconium dichloride;

dimethylamidoborane(2-n-butyl, 4-f3',5'-bis-

trifluoromethylphenyl]indenyl)zirconium dichloride;

dimethylamidoborane(2-iso-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl).zirconium dichloride:

dimethylamidoborane(2-sec-butyl, 4-[3',5'-bis-

trifluoromethylphenyl]indenyl),zirconium dichloride;

dimethylamidoborane(2-tert-butyl, 4-[3',5'-bis-

trifluoromethylphenyl]indenyl),zirconium dichloride;

 $\label{limit} dimethylamidoborane (2-ethyl, 4-[3',5'-di-iso-propylphenyl] indenyl)_z zirconium dichloride:$

dimethylamidoborane(2-n-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl),zirconium dichloride

dimethylamidoborane(2-iso-propyl, 4-[3',5'-di-iso-

propylphenyl]indenyl),zirconium dichloride:

dimethylamidoborane(2-n-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dichloride: dimethylamidoborane(2-iso-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)_zzirconium dichloride;

dimethylamidoborane(2-sec-butyl, 4-[3',5'-di-iso-

propylphenyl lindenyl), zirconium dichloride:

dimethylamidoborane(2-tert-butyl, 4-[3',5'-di-iso-

propylphenyl]indenyl),zirconium dichloride:

dimethylamidoborane(2-methyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dichloride:

dimethylamidoborane(2-ethyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dichloride:

dimethylamidoborane(2-n-propyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dichloride;

dimethylamidoborane(2-iso-propyl, 4-[3',5'-di-phenylphenyl]indenyl)_zzirconium dichloride;

dimethylamidoborane(2-n-butyl, 4-[3',5'-di-phenylphenyl]indenyl),zirconium dichloride;

 $\label{limited} dimethylamidoborane (2-iso-butyl, 4-[3',5'-di-phenylphenyl] indenyl)_z zirconium dichloride;$

dimethylamidoborane(2-sec-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dichloride;

dimethylamidoborane(2-tert-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dichloride:

dimethylamidoborane(2-methyl, 4-[3',5'-di-tbutylphenyl]indenyl) $_2$ η^4 -1,4-diphenyl-1,3-butadiene;

dimethylamidoborane(2-ethyl, 4-[3',5'-di-tbutylphenyl]indenyl) $_2$ η^4 -1,4-diphenyl-1.3-butadiene:

dimethylamidoborane(2-n-propyl, 4-[3',5'-di-tbutylphenyl]]indenyl] $_2$ η^4 -1,4-diphenyl-1.3-butadiene:

dimethylamidoborane (2-iso-propyl, 4-[3',5'-di-tbutylphenyl]indenyl), η^4 -1,4-diphenyl-1,3-butadiene;

- $dimethylamidoborane (2-n-butyl, 4-[3',5'-di-tbutylphenyl] indenyl)_2\,\eta^4-1,4-$
- diphenyl-1,3-butadiene;
- dimethylamidoborane(2-iso-butyl, 4-[3',5'-di-tbutylphenyl]indenyl), n4-1,4-
- diphenyl-1,3-butadiene;
- dimethylamidoborane(2-sec-butyl, 4-[3',5'-di-tbutylphenyl]indenyl), n4-1,4-
- diphenyl-1,3-butadiene;
- $dimethylamidoborane (2-tert-butyl, 4-[3',5'-di-tbutylphenyl] indenyl)_2\,\eta^4-1,4-$
- diphenyl-1,3-butadiene;
- dimethylamidoborane(2-ethyl, 4-[3',5'-bis-trifluoromethylphenyl]]indenyl) $_2$ η^4 -1,4-diphenyl-1,3-butadiene;
- dimethylamidoborane(2-n-propyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl) $_2$ η^4 -1.4-diphenyl-1.3-butadiene:
- dimethylamidoborane(2-iso-propyl, 4-[3',5'-bis- trifluoromethylphenyl]indenyl $]_2$ n^4 -1,4-diphenyl-1,3-butadiene;
- dimethylamidoborane(2-n-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl) $_2$ η^4 -1.4-diphenyl-1.3-butadiene:
- dimethylamidoborane(2-iso-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl) $_2$ η^4 -1,4-diphenyl-1,3-butadiene;
- dimethylamidoborane(2-sec-butyl, 4-[3',5'-bis-trifluoromethylphenyl]jindenyl) $_2$ η^4 -1,4-diphenyl-1,3-butadiene;
- dimethylamidoborane(2-tert-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl) $_2$ η^4 -1,4-diphenyl-1,3-butadiene;
- dimethylamidoborane(2-ethyl, 4-[3',5'-di-iso-propylphenyl]indenyl) $_2$ η^4 -1,4-diphenyl-1,3-butadiene;
- dimethylamidoborane(2-n-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂ η^4 -1,4-diphenyl-1,3-butadiene;
- dimethylamidoborane(2-iso-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl) η^4 -1,4-diphenyl-1,3-butadiene;

- dimethylamidoborane(2-n-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂ η^4 -1,4-diphenyl-1,3-butadiene;
- $\label{eq:dimethylamidoborane (2-iso-butyl, 4-[3',5'-di-iso-propylphenyl] indenyl)} 1,4-[3',5'-di-iso-propylphenyl] indenyl),2-[3',5'-di-iso-propylphenyl] indenyl),3-butadiene;$
- dimethylamidoborane(2-sec-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl) $_2\eta^4$ -1,4-diphenyl-1,3-butadiene:
- dimethylamidoborane(2-tert-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl) $_2$ η^4 -1,4-diphenyl-1.3-butadiene:
- dimethylamidoborane(2-methyl, 4-[3',5'-di-phenylphenyl]indenyl) $_2$ η^4 -1,4-diphenyl-1.3-butadiene:
- dimethylamidoborane(2-ethyl, 4-[3',5'-di-phenylphenyl]indenyl) $_2$ η^4 -1,4-diphenyl-1.3-butadiene:
- dimethylamidoborane(2-n-propyl, 4-[3',5'-di-phenylphenyl]indenyl) $_2$ η^4 -1,4-diphenyl-1.3-butadiene:
- dimethylamidoborane(2-iso-propyl, 4-[3',5'-di-phenylphenyl]indenyl) $_2$ η^4 -1,4-diphenyl-1,3-butadiene;
- dimethylamidoborane(2-n-butyl, 4-[3',5'-di-phenylphenyl]indenyl) $_2$ η^4 -1,4-diphenyl-1,3-butadiene;
- dimethylamidoborane(2-iso-butyl, 4-[3',5'-di-phenylphenyl]indenyl) $_2$ η^4 -1,4-diphenyl-1.3-butadiene:
- dimethylamidoborane(2-sec-butyl, 4-[3',5'-di-phenylphenyl]indenyl) $_2$ η^4 -1,4-diphenyl-1,3-butadiene;
- dimethylamidoborane(2-tert-butyl, 4-[3',5'-di-phenylphenyl]jindenyl) $_2$ η^4 -1,4-diphenyl-1,3-butadiene:
- dimethylamidoborane(2-methyl, 4-[3',5'-di-tbutylphenyl]indenyl), zirconium dimethyl;
- $\label{limit} dimethyl amidoborane (2-ethyl, 4-[3',5'-di-tbutyl phenyl)] indenyl)_{z} zirconium \\ dimethyl;$

dimethylamidoborane(2-n-propyl, 4-[3',5'-di-fbutylphenyl]indenyl),zirconium dimethyl;

 $\label{limited} \mbox{dimethylamidoborane} (2\mbox{-iso-propyl}, 4\mbox{-}[3',5'\mbox{-}di\mbox{-}di\mbox{-}tbutylphenyl] indenyl)_{2} \mbox{zirconium dimethyl};$

dimethylamidoborane(2-n-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dimethyl:

dimethylamidoborane(2-iso-butyl, 4-[3',5'-di-fbutylphenyl]indenyl)₂zirconium dimethyl;

 $\label{lem:dimethylamidoborane (2-sec-butyl, 4-[3',5'-di-tbutylphenyl] indenyl)} indenyl)_{z} zirconium dimethyl;$

 $\label{lem:dimethylamidoborane (2-tert-butyl, 4-[3',5'-di-tbutylphenyl] indenyl)} indenyl)_z zirconium dimethyl;$

dimethylamidoborane(2-ethyl, 4-[3'.5'-bis-

trifluoromethylphenyl]indenyl),zirconium dimethyl;

dimethylamidoborane(2-n-propyl, 4-13',5'-bis-

trifluoromethylphenyl]indenyl),zirconium dimethyl;

dimethylamidoborane(2-iso-propyl, 4-[3',5'-bis-

trifluoromethylphenyl]indenyl),zirconium dimethyl;

dimethylamidoborane(2-n-butyl, 4-[3',5'-bis-

trifluoromethylphenyl]indenyl)2zirconium dimethyl;

dimethylamidoborane(2-iso-butyl, 4-[3',5'-bis-

trifluoromethylphenyl]indenyl)2zirconium dimethyl;

dimethylamidoborane(2-sec-butyl, 4-[3',5'-bis-

trifluoromethylphenyl]indenyl),zirconium dimethyl;

dimethylamidoborane(2-tert-butyl, 4-[3',5'-bis-

trifluoromethylphenyl]indenyl),zirconium dimethyl;

 $\label{limit} dimethyl amidoborane (2-ethyl, 4-[3',5'-di-iso-propylphenyl] indenyl)_{2} zirconium \\ dimethyl;$

dimethylamidoborane(2-n-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl),zirconium dimethyl dimethylamidoborane(2-iso-propyl, 4-[3',5'-di-iso-

propylphenyl]indenyl),zirconium dimethyl;

dimethylamidoborane(2-n-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl),zirconium dimethyl;

dimethylamidoborane(2-iso-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dimethyl:

dimethylamidoborane(2-sec-butyl, 4-[3',5'-di-iso-

propylphenyl]indenyl)2zirconium dimethyl;

dimethylamidoborane(2-tert-butyl, 4-[3',5'-di-iso-

propylphenyl]indenyl),zirconium dimethyl;

dimethylamidoborane(2-methyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dimethyl:

dimethylamidoborane(2-ethyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dimethyl:

dimethylamidoborane(2-n-propyl, 4-[3',5'-di-phenylphenyl]indenyl),zirconium dimethyl:

dimethylamidoborane(2-iso-propyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dimethyl:

dimethylamidoborane(2-n-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dimethyl:

dimethylamidoborane(2-iso-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dimethyl;

dimethylamidoborane(2-sec-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dimethyl:

dimethylamidoborane(2-tert-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dimethyl:

diisopropylamidoborane(2-methyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dichloride:

diisopropylamidoborane(2-ethyl, 4-[3',5'-di-tbutylphenyl]indenyl);zirconium dichloride:

diisopropylamidoborane(2-n-propyl, 4-[3',5'-di-tbutylphenyl]indenyl),zirconium dichloride:

diisopropylamidoborane(2-iso-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dichloride;

diisopropylamidoborane(2-n-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dichloride:

diisopropylamidoborane(2-iso-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dichloride:

 $\label{eq:disopropylamidoborane (2-sec-butyl, 4-[3',5'-di-tbutylphenyl] indenyl)} z irconium dichloride:$

diisopropylamidoborane(2-tert-butyl, 4-[3',5'-di-tbutylphenyl]indenyl),zirconium dichloride:

diisopropylamidoborane(2-ethyl, 4-[3',5'-bis-

trifluoromethylphenyl]indenyl),zirconium dichloride;

diisopropylamidoborane(2-n-propyl, 4-[3',5'-bis-

trifluoromethylphenyl]indenyl)2zirconium dichloride;

diisopropylamidoborane(2-iso-propyl, 4-[3',5'-bistrifluoromethylphenyllindenyl).zirconium dichloride:

diisopropylamidoborane(2-n-butyl, 4-[3',5'-bis-

trifluoromethylphenyl]indenyl)2zirconium dichloride;

diisopropylamidoborane(2-iso-butyl, 4-[3',5'-bis-

trifluoromethylphenyl]indenyl);zirconium dichloride;

diisopropylamidoborane(2-sec-butyl, 4-[3',5'-bis-

 $trifluoromethylphenyl] indenyl)_2 zirconium\ dichloride;$

diisopropylamidoborane(2-tert-butyl, 4-[3',5'-bis-

trifluoromethylphenyl]indenyl)2zirconium dichloride;

diisopropylamidoborane(2-ethyl, 4-[3',5'-di-iso-propylphenyl]indenyl)₂zirconium dichloride:

diisopropylamidoborane(2-n-propyl, 4-[3',5'-di-iso-

propylphenyl]indenyl)2zirconium dichloride

diisopropylamidoborane(2-iso-propyl, 4-[3',5'-di-iso-

propylphenyl]indenyl)2zirconium dichloride;

diisopropylamidoborane(2-n-butyl, 4-f3',5'-di-iso-

propylphenyl]indenyl)2zirconium dichloride;

diisopropylamidoborane(2-iso-butyl, 4-13',5'-di-iso-

propylphenyl]indenyl)2zirconium dichloride;

diisopropylamidoborane(2-sec-butyl, 4-[3',5'-di-iso-

propylphenyllindenyl), zirconium dichloride;

diisopropylamidoborane(2-tert-butyl, 4-[3',5'-di-iso-

propylphenyl]indenyl),zirconium dichloride;

diisopropylamidoborane(2-methyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dichloride:

diisopropylamidoborane(2-ethyl, 4-[3',5'-di-phenylphenyl]indenyl),zirconium dichloride:

diisopropylamidoborane(2-n-propyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dichloride:

diisopropylamidoborane(2-iso-propyl, 4-[3',5'-di-

phenylphenyllindenyl),zirconium dichloride;

diisopropylamidoborane(2-n-butyl, 4-[3',5'-di-phenylphenyl]indenyl),zirconium dichloride:

diisopropylamidoborane(2-iso-butyl, 4-[3',5'-di-phenylphenyl]indenyl),zirconium dichloride:

diisopropylamidoborane(2-sec-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dichloride:

diisopropylamidoborane(2-tert-butyl, 4-[3',5'-di-phenylphenyl]indenyl),zirconium dichloride;

diisopropylamidoborane(2-methyl, 4-[3',5'-di-tbutylphenyl]]indenyl) $_2$ η^4 -1,4-diphenyl-1,3-butadiene;

diisopropylamidoborane(2-ethyl, 4-[3',5'-di-tbutylphenyl]indenyl) $_2$ η^4 -1,4-diphenyl-1,3-butadiene;

- diisopropylamidoborane(2-n-propyl, 4-[3',5'-di-tbutylphenyl]indenyl) $_2\eta^4$ -1,4-diphenyl-1,3-butadiene:
- diisopropylamidoborane(2-iso-propyl, 4-[3',5'-di-tbutylphenyl]indenyl), n4-1.4-
- disopropylamidoborane(2-iso-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂η'-1,4diphenyl-1,3-butadiene;
- diisopropylamidoborane(2-n-butyl, 4-[3',5'-di-tbutylphenyl]jindenyl) $_2$ η^4 -1,4-diphenyl-1,3-butadiene;
- diisopropylamidoborane(2-iso-butyl, 4-[3',5'-di-tbutylphenyl]indenyi) $_2$ η^4 -1,4-diphenyl-1,3-butadiene:
- diisopropylamidoborane(2-sec-butyl, 4-[3',5'-di-tbutylphenyl]indenyl) $_2$ η^4 -1,4-dibhenyl-1.3-butadiene:
- diisopropylamidoborane(2-tert-butyl, 4-[3',5'-di-tbutylphenyl])indenyl) $_2$ η^4 -1,4-diphenyl-1,3-butadiene:
- diisopropylamidoborane(2-ethyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl) $_2\eta^4$ -1,4-diphenyl-1,3-butadiene:
- diisopropylamidoborane(2-n-propyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl) $_2$ η^4 -1,4-diphenyl-1,3-butadiene:
- diisopropylamidoborane(2-iso-propyl, 4-[3',5'-bis-
- trifluoromethylphenyl]indenyl)2 n4-1,4-diphenyl-1,3-butadiene;
- diisopropylamidoborane(2-n-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl), η^4 -1.4-diphenyl-1.3-butadiene:
- diisopropylamidoborane(2-iso-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)₂ η^4 -1,4-diphenyl-1,3-butadiene:
- diisopropylamidoborane(2-sec-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl) $_2$ η^4 -1,4-diphenyl-1,3-butadiene:
- diisopropylamidoborane(2-tert-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl) $_2$ η^4 -1,4-diphenyl-1,3-butadiene:
- diisopropylamidoborane (2-ethyl, 4-[3',5'-di-iso-propylphenyl]indenyl), 2 η^4 -1,4-diphenyl-1,3-butadiene;

diisopropylamidoborane(2-n-propyl, 4-[3',5'-di-iso-propylphenyl]]indenyl) $_2$ η^4 -1,4-diphenyl-1,3-butadiene;

diisopropylamidoborane(2-iso-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl) η4-

1,4-diphenyl-1,3-butadiene;

diphenyl-1,3-butadiene;

diphenyl-1,3-butadiene;

diphenyl-1,3-butadiene;

diisopropylamidoborane(2-iso-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl) $_2$ η^4 -1,4-diphenyl-1,3-butadiene;

diisopropylamidoborane(2-sec-butyl, 4-[3',5'-di-iso-propylphenyl]]indenyl) $_2$ η^4 -1,4-diphenyl-1,3-butadiene;

diisopropylamidoborane(2-tert-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl) $_2$ η^4 -1,4-diphenyl-1,3-butadiene;

diisopropylamidoborane(2-methyl, 4-[3',5'-di-phenylphenyl]indenyl) $_2$ η^4 -1,4-diphenyl-1,3-butadiene;

diisopropylamidoborane(2-ethyl, 4-[3',5'-di-phenylphenyl]indenyl) $_2$ η^4 -1,4-diphenyl-1,3-butadiene:

diisopropylamidoborane(2-n-propyl, 4-[3',5'-di-phenylphenyl]indenyl) $_2$ η^4 -1,4-diphenyl-1,3-butadiene;

diisopropylamidoborane(2-iso-propyl, 4-[3',5'-di-phenylphenyl]indenyl)₂ η^4 -1,4-diphenyl-1,3-butadiene;

diisopropylamidoborane(2-n-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂ η^4 -1,4-diphenyl-1,3-butadiene;

diisopropylamidoborane(2-iso-butyl, 4-[3',5'-di-phenylphenyl]indenyl), η^4 -1,4-

diisopropylamidoborane (2-sec-butyl, 4-[3',5'-di-phenylphenyl]indenyl) _2 η^4 -1,4-

$$\label{eq:dispersion} \begin{split} & \text{dispensyl-1,3-butadiene;} \\ & \text{disporopylamidoborane(2-tert-butyl, 4-[3',5'-di-phenylphenyl]indenyl)}_2 \eta^4-1,4- \end{split}$$

diisopropylamidoborane(2-methyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dimethyl:

diisopropylamidoborane(2-ethyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dimethyl;

diisopropylamidoborane(2-n-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dimethyl;

 $\label{limited} disopropylamidoborane (2-iso-propyl, 4-[3',5'-di-tbutylphenyl] indenyl), zirconium dimethyl;$

 $\label{limited} diisopropylamidoborane (2-n-butyl, 4-[3',5'-di-tbutylphenyl] indenyl)_{z} zirconium dimethyl;$

diisopropylamidoborane(2-iso-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dimethyl;

diisopropylamidoborane(2-sec-butyl, 4-[3',5'-di-tbutylphenyl]indenyl),zirconium dimethyl;

diisopropylamidoborane(2-tert-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂zirconium dimethyl:

diisopropylamidoborane(2-ethyl, 4-[3',5'-bistrifluoromethylphenyl]indenyl);zirconium dimethyl; diisopropylamidoborane(2-n-propyl, 4-[3',5'-bistrifluoromethylphenyl]indenyl);zirconium dimethyl; diisopropylamidoborane(2-iso-propyl, 4-[3',5'-bistrifluoromethylphenyl]indenyl);zirconium dimethyl; diisopropylamidoborane(2-n-butyl, 4-[3',5'-bistrifluoromethylphenyl]indenyl);zirconium dimethyl; diisopropylamidoborane(2-iso-butyl, 4-[3',5'-bistrifluoromethylphenyl]indenyl);zirconium dimethyl; diisopropylamidoborane(2-sec-butyl, 4-[3',5'-bistrifluoromethylphenyl]indenyl);zirconium dimethyl; diisopropylamidoborane(2-tert-butyl, 4-[3',5'-bis-

trifluoromethylphenyl]indenyl),zirconium dimethyl;

diisopropylamidoborane(2-ethyl, 4-[3',5'-di-iso-propylphenyl]indenyl),zirconium dimethyl;

diisopropylamidoborane(2-n-propyl, 4-[3',5'-di-iso-

propylphenyl]indenyl),zirconium dimethyl

diisopropylamidoborane(2-iso-propyl, 4-[3',5'-di-iso-

propylphenyl]indenyl),zirconium dimethyl;

diisopropylamidoborane(2-n-butyl, 4-[3',5'-di-iso-

propylphenyl]indenyl)2zirconium dimethyl;

diisopropylamidoborane(2-iso-butyl, 4-[3',5'-di-iso-

propylphenyl]indenyl),zirconium dimethyl;

diisopropylamidoborane(2-sec-butyl, 4-[3',5'-di-iso-

propylphenyllindenyl), zirconium dimethyl;

diisopropylamidoborane(2-tert-butyl, 4-[3',5'-di-iso-

propylphenyllindenyl), zirconium dimethyl;

diisopropylamidoborane(2-methyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dimethyl

diisopropylamidoborane(2-ethyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dimethyl;

diisopropylamidoborane(2-n-propyl, 4-[3',5'-di-phenylphenyl]indenyl),zirconium dimethyl:

diisopropylamidoborane(2-iso-propyl, 4-[3',5'-di-

phenylphenyllindenyl), zirconium dimethyl;

diisopropylamidoborane(2-n-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dimethyl;

diisopropylamidoborane(2-iso-butyl, 4-[3',5'-di-phenylphenyl]indenyl),zirconium dimethyl;

diisopropylamidoborane(2-sec-butyl, 4-[3',5'-di-phenylphenyl]indenyl)₂zirconium dimethyl:

 $\label{eq:dispression} {\rm diisopropylamidoborane} (2\text{-tert-butyl}, 4\text{-}[3^{\circ},5^{\circ}\text{-di-phenyl}] {\rm phenyl}] {\rm indenyl})_2 {\rm zirconium \ dimethyl};$

bis(trimethylsilyl)amidoborane(2-methyl, 4-[3',5'-ditbutylphenyllindenyl), zirconium dichloride: bis(trimethylsilyl)amidoborane(2-ethyl, 4-[3',5'-ditbutylphenyllindenyl)-zirconium dichloride: bis(trimethylsilyl)amidoborane(2-n-propyl, 4-I3',5'-ditbutylphenyllindenyl),zirconium dichloride; bis(trimethylsilyl)amidoborane(2-iso-propyl, 4-[3',5'-ditbutylphenyl]indenyl),zirconium dichloride; bis(trimethylsilyl)amidoborane(2-n-butyl, 4-13',5'-ditbutylphenyl]indenyl),zirconium dichloride; bis(trimethylsilyl)amidoborane(2-iso-butyl, 4-[3',5'-ditbutylphenyl]indenyl),zirconium dichloride; bis(trimethylsilyl)amidoborane(2-sec-butyl, 4-[3',5'-ditbutylphenyllindenyl).zirconium dichloride; bis(trimethylsilyl)amidoborane(2-tert-butyl, 4-[3',5'-ditbutylphenyllindenyl),zirconium dichloride; bis(trimethylsilyl)amidoborane(2-ethyl, 4-[3',5'-bistrifluoromethylphenyl]indenyl)2zirconium dichloride; bis(trimethylsilyl)amidoborane(2-n-propyl, 4-[3',5'-bistrifluoromethylphenyl]indenyl),zirconium dichloride; bis(trimethylsilyl)amidoborane(2-iso-propyl, 4-13',5'-bistrifluoromethylphenyllindenyl)-zirconium dichloride: bis(trimethylsilyl)amidoborane(2-n-butyl, 4-[3',5'-bistrifluoromethylphenyllindenyl),zirconium dichloride: bis(trimethylsilyl)amidoborane(2-iso-butyl, 4-[3',5'-bistrifluoromethylphenyl]indenyl),zirconium dichloride; bis(trimethylsilyl)amidoborane(2-sec-butyl, 4-[3',5'-bistrifluoromethylphenyl]indenyl),zirconium dichloride; bis(trimethylsilyl)amidoborane(2-tert-butyl, 4-[3',5'-bistrifluoromethylphenyllindenyl)-zirconium dichloride:

bis(trimethylsilyl)amidoborane(2-ethyl, 4-[3',5'-di-isopropylphenyl]indenyl),zirconium dichloride; bis(trimethylsilyl)amidoborane(2-n-propyl, 4-f3',5'-di-isopropylphenyl]indenyl),zirconium dichloride bis(trimethylsilyl)amidoborane(2-iso-propyl, 4-13',5'-di-isopropylphenyllindenyl), zirconium dichloride; bis(trimethylsilyl)amidoborane(2-n-butyl, 4-13',5'-di-isopropylphenyllindenyl), zirconium dichloride: bis(trimethylsilyl)amidoborane(2-iso-butyl, 4-f3',5'-di-isopropylphenyllindenyl), zirconium dichloride: bis(trimethylsilyl)amidoborane(2-sec-butyl, 4-[3',5'-di-isopropylphenyl]indenyl),zirconium dichloride; bis(trimethylsilyl)amidoborane(2-tert-butyl, 4-[3',5'-di-isopropylphenyl]indenyl),zirconium dichloride; bis(trimethylsilyl)amidoborane(2-methyl, 4-[3',5'-diphenylphenyllindenyl), zirconium dichloride; bis(trimethylsilyl)amidoborane(2-ethyl, 4-f3',5'-diphenylphenyllindenyl), zirconium dichloride; bis(trimethylsilyl)amidoborane(2-n-propyl, 4-[3',5'-diphenylphenyllindenyl), zirconium dichloride; bis(trimethylsilyl)amidoborane(2-iso-propyl, 4-[3',5'-diphenylphenyl]indenyl),zirconium dichloride; bis(trimethylsilyl)amidoborane(2-n-butyl, 4-[3',5'-diphenylphenyl]indenyl)2zirconium dichloride; bis(trimethylsilyl)amidoborane(2-iso-butyl, 4-[3',5'-diphenylphenyl]indenyl),zirconium dichloride; bis(trimethylsilyl)amidoborane(2-sec-butyl, 4-f3',5'-diphenylphenyl]indenyl),zirconium dichloride; bis(trimethylsilyl)amidoborane(2-tert-butyl, 4-[3',5'-diphenylphenyl]indenyl),zirconium dichloride;

bis(trimethylsilyl)amidoborane(2-methyl, 4-[3',5'-di-tbutylphenyl]indenyl)₂ η^4 -1,4-diphenyl-1,3-butadiene:

bis(trimethylsilyl)amidoborane(2-ethyl, 4-[3',5'-di-tbutylphenyl]indenyi)₂ η^4 -1,4-diphenyl-1.3-butadiene:

bis(trimethylsily1)amidoborane(2-n-propyl, 4-[3',5'-di-tbutylphenyl]indenyl) $_2\eta^4$ -1.4-diphenyl-1.3-butadiene:

bis(trimethylsilyl)amidoborane(2-iso-propyl, 4-[3',5'-di-tbutylphenyl]indenyl) $_2\eta^4$ -1.4-diphenyl-1.3-butadiene:

bis(trimethylsilyl)amidoborane(2-n-butyl, 4-[3',5'-di-tbutylphenyl]indenyl) $_2$ η^4 -1,4-diphenyl-1,3-butadiene:

bis(trimethylsilyl)amidoborane(2-iso-butyl, 4-[3',5'-di-tbutylphenyl]indenyl) $_2$ η^4 -1,4-diphenyl-1,3-butadiene:

bis(trimethylsilyl)amidoborane(2-sec-butyl, 4-[3',5'-di-tbutylphenyl]indenyl) $_2$ η^4 -1,4-diphenyl-1,3-butadiene:

bis(trimethylsilyl)amidoborane(2-tert-butyl, 4-[3',5'-di-tbutylphenyl]indenyl) $_2$ η^4 -1.4-diphenyl-1.3-butadiene:

bis(trimethylsilyl)amidoborane(2-ethyl, 4-[3',5'-bis-

trifluoromethylphenyl]indenyl)2 η4-1,4-diphenyl-1,3-butadiene;

bis(trimethylsilyl)amidoborane(2-n-propyl, 4-[3',5'-bis-

trifluoromethylphenyl]indenyl)2 η4-1,4-diphenyl-1,3-butadiene;

bis (trimethyl silyl) a midoborane (2-iso-propyl, 4-[3',5'-bis-propyl), 4-[3',5'-bis-propyl], 4-[3',5'-bis-p

trifluoromethylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;

bis(trimethylsilyl)amidoborane(2-n-butyl, 4-[3',5'-bis-

trifluoromethylphenyl]indenyl)₂ η⁴-1,4-diphenyl-1,3-butadiene;

bis(trimethylsilyl)amidoborane(2-iso-butyl, 4-[3',5'-bis-

trifluoromethylphenyl]indenyl), η4-1,4-diphenyl-1,3-butadiene;

bis(trimethylsilyl)amidoborane(2-sec-butyl, 4-[3',5'-bis-

trifluoromethylphenyl]indenyl) $_{2}$ η^{4} -1,4-diphenyl-1,3-butadiene;

bis(trimethylsilyl)amidoborane(2-tert-butyl, 4-[3',5'-bis-

n4-1.4-diphenyl-1.3-butadiene:

trifluoromethylphenyllindenyl), n4-1,4-diphenyl-1,3-butadiene:

bis(trimethylsilyl)amidoborane(2-ethyl, 4-[3',5'-di-iso-propylphenyl]indenyi) $_2$ η^4 -1,4-diphenyl-1,3-butadiene;

bis(trimethylsilyl)amidoborane(2-n-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl) $_2$ n'-1.4-diphenyl-1.3-butadiene:

bis(trimethylsilyl)amidoborane(2-iso-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)

bis(trimethylsilyl)amidoborane(2-n-butyl, 4-[3',5'-di-iso-propylphenyl])indenyl) $_2$ $_1$ 4-1,4-diphenyl-1,3-butadiene:

bis(trimethylsilyl)amidoborane(2-iso-butyl, 4-[3',5'-di-iso-propylphenyl]lindenyl)₂ n^4 -1.4-diphenyl-1.3-butadiene:

bis(trimethylsilyl)amidoborane(2-sec-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl) $_2$ η^4 -1,4-diphenyl-1,3-butadiene;

bis(trimethylsilyl)amidoborane(2-text-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl) $_2$ η^4 -1,4-diphenyl-1,3-butadiene;

bis(trimethylsily1)amidoborane(2-methyl, 4-[3',5'-di-phenylphenyl]indenyl) $_2$ η^4 -1,4-diphenyl-1,3-butadiene;

bis(trimethylsilyl)amidoborane(2-ethyl, 4-[3',5'-di-phenylphenyl]indenyl) $_2$ η^4 -1,4-diphenyl-1,3-butadiene;

bis(trimethylsilyl)amidoborane(2-n-propyl, 4-[3',5'-di-phenylphenyl]indenyl) $_2$ η^4 1.4-diphenyl-1.3-butadiene:

bis(trimethylsilyl)amidoborane(2-iso-propyl, 4-[3 $^{\circ}$,5 $^{\circ}$ -di-phenylphenyl]indenyl)₂ n^{4} -1,4-diphenyl-1,3-butadiene:

bis(trimethylsilyl)amidoborane(2-n-butyl, 4-[3',5'-di-phenylphenyl]indenyl) $_2$ η^4 -1.4-diphenyl-1.3-butadiene:

bis(trimethylsily1)amidoborane(2-iso-butyl, 4-[3',5'-di-phenylphenyl]indenyl) $_2\eta^4$ -1,4-diphenyl-1,3-butadiene;

bis(trimethylsilyl)amidoborane(2-sec-butyl, 4-[3',5'-di-phenylphenyl]indenyl) $_2$ η^4 -1.4-diphenyl-1.3-butadiene;

bis(trimethylsilyl)amidoborane(2-tert-butyl, 4-[3',5'-di-phenylphenyl]indenyl) $_2\eta^4$ -1.4-diphenyl-1.3-hutadiene:

1,4-diphenyl-1,3-butadiene; bis(trimethylsilyl)amidoborane(2-methyl, 4-[3',5'-ditbutylphenyllindenyl),zirconium dimethyl; bis(trimethylsilyl)amidoborane(2-ethyl, 4-f3',5'-ditbutylphenyllindenyl),zirconium dimethyl; bis(trimethylsilyl)amidoborane(2-n-propyl, 4-[3',5'-ditbutylphenyl]indenyl),zirconium dimethyl; bis(trimethylsilyl)amidoborane(2-iso-propyl, 4-[3',5'-ditbutylphenyllindenyl),zirconium dimethyl: bis(trimethylsilyl)amidoborane(2-n-butyl, 4-[3',5'-ditbutylphenyllindenyl), zirconium dimethyl; bis(trimethylsilyl)amidoborane(2-iso-butyl, 4-[3',5'-ditbutylphenyl]indenyl),zirconium dimethyl; bis(trimethylsilyl)amidoborane(2-sec-butyl, 4-[3',5'-ditbutylphenyl]indenyl),zirconium dimethyl; bis(trimethylsilyl)amidoborane(2-tert-butyl, 4-[3',5'-ditbutylphenyllindenyl),zirconium dimethyl: bis(trimethylsilyl)amidoborane(2-ethyl, 4-[3',5'-bistrifluoromethylphenyllindenyl).zirconium dimethyl; bis(trimethylsilyl)amidoborane(2-n-propyl, 4-[3',5'-bistrifluoromethylphenyllindenyl), zirconium dimethyl; bis(trimethylsilyl)amidoborane(2-iso-propyl, 4-[3',5'-bistrifluoromethylphenyllindenyl),zirconium dimethyl; bis(trimethylsilyl)amidoborane(2-n-butyl, 4-[3',5'-bistrifluoromethylphenyllindenyl).zirconium dimethyl:

bis(trimethylsilyl)amidoborane(2-iso-butyl, 4-[3',5'-bistrifluoromethylphenyl]indenyl)zirconium dimethyl; bis(trimethylsilyl)amidoborane(2-sec-butyl, 4-[3',5'-bistrifluoromethylphenyl]indenyl),zirconium dimethyl; bis(trimethylsilyl)amidoborane(2-tert-butyl, 4-[3',5'-bistrifluoromethylphenyllindenyl),zirconium dimethyl; bis(trimethylsilyl)amidoborane(2-ethyl, 4-[3',5'-di-isopropylphenyl]indenyl),zirconium dimethyl; bis(trimethylsilyl)amidoborane(2-n-propyl, 4-[3'.5'-di-isopropylphenyl]indenyl),zirconium dimethyl bis(trimethylsilyl)amidoborane(2-iso-propyl, 4-[3',5'-di-isopropylphenyl]indenyl),zirconium dimethyl; bis(trimethylsilyl)amidoborane(2-n-butyl, 4-[3',5'-di-isopropylphenyl]indenyl)2zirconium dimethyl; bis(trimethylsilyl)amidoborane(2-iso-butyl, 4-[3',5'-di-isopropylphenyllindenyl), zirconium dimethyl; bis(trimethylsilyl)amidoborane(2-sec-butyl, 4-[3',5'-di-isopropylphenyl]indenyl),zirconium dimethyl; bis(trimethylsilyl)amidoborane(2-tert-butyl, 4-[3',5'-di-isopropylphenyl]indenyl)2zirconium dimethyl; bis(trimethylsilyf)amidoborane(2-methyl, 4-[3',5'-diphenylphenyllindenyl), zirconium dimethyl; bis(trimethylsilyf)amidoborane(2-ethyl, 4-[3',5'-diphenylphenyl]indenyl),zirconium dimethyl; bis(trimethylsilyl)amidoborane(2-n-propyl, 4-[3',5'-diphenylphenyl]indenyl),zirconium dimethyl; bis(trimethylsilyl)amidoborane(2-iso-propyl, 4-[3',5'-diphenylphenyllindenyl), zirconium dimethyl; bis(trimethylsilyl)amidoborane(2-n-butyl, 4-[3',5'-diphenylphenyllindenyl), zirconium dimethyl; bis(trimethylsilyl)amidoborane(2-iso-butyl, 4-[3',5'-diphenylphenyllindenyl), zirconium dimethyl;

bis(trimethylsilyl)amidoborane(2-sec-butyl, 4-[3',5'-diphenylphenyl]indenyl),zirconium dimethyl; and bis(trimethylsilyl)amidoborane(2-tert-butyl, 4-[3',5'-diphenylphenyl]indenyl),zirconium dimethyl; and the like.

The most preferred species are the racemic versions of: dimethylsilylbis(indenyl) zirconium dichloride, dimethylsilylbis(indenyl) zirconium dimethyl, ethylenebis(indenyl) zirconium dichloride. ethylenebis(indenyl) zirconium dimethyl, dimethylsilylbis(tetrahydorindenyl) zirconium dichloride, dimethylsilylbis(tetrahydorindenyl) zirconium dimethyl. ethylenebis(tetrahydorindenyl) zirconium dichloride. ethylenebis(tetrahydorindenyl) zirconium dimethyl, dimethylsilylbis(2methylindenyl) zirconium dichloride, dimethylsilylbis(2-methylindenyl) zirconium dimethyl, ethylenebis(2-methylindenyl) zirconium dichloride. ethylenebis(2-methylindenyl) zirconium dimethyl, dimethylsilylbis(2-methyl-4 phenylindenyl) zirconium dichloride, dimethylsilylbis(2-methyl-4-phenylindenyl) zirconium dimethyl, ethylenebis(2-methyl-4-phenylindenyl) zirconium dichloride. ethylenebis(2-methyl-4-phenylindenyl) zirconium dimethyl, dimethylsilylbis(4.7dimethylindenyl) zirconium dichloride, dimethylsilylbis(4,7-dimethylindenyl) zirconium dimethyl, ethylenebis(4,7-dimethylindenyl) zirconium dichloride. ethylenebis(4.7-dimethylindenyl) zirconium dimethyl, dimethylsilylbis(indenyl) hafnium dichloride, dimethylsilylbis(indenyl) hafnium dimethyl, ethylenebis(indenyl) hafnium dichloride, ethylenebis(indenyl) hafnium dimethyl, dimethylsilylbis(tetrahydorindenyl) hafnium dichloride. dimethylsilylbis(tetrahydorindenyl) hafnium dimethyl. ethylenebis(tetrahydorindenyl) hafnium dichloride, ethylenebis(tetrahydorindenyl) hafnium dimethyl, dimethylsilylbis(2-methylindenyl) hafnium dichloride. dimethylsilylbis(2-methylindenyl) hafnium dimethyl, ethylenebis(2methylindenyl) hafnium dichloride, ethylenebis(2-methylindenyl) hafnium dimethyl, dimethylsilylbis(2-methyl-4-phenylindenyl) hafnium dichloride.

dimethylsilylbis(2-methyl-4-phenylindenyl) hafnium dimethyl, ethylenebis(2methyl-4-phenylindenyl) hafnium dichloride, ethylenebis(2-methyl-4phenylindenyl) hafnium dimethyl, dimethylsilylbis(4,7-dimethylindenyl) hafnium dichloride, dimethylsilylbis(4,7-dimethylindenyl) hafnium dimethyl, ethylenebis(4,7-dimethylindenyl) hafnium dichloride, and ethylenebis(4,7dimethylindenyl) hafnium dimethyl.

[00193] Similarly, metallocene precursors providing tacticity control exist where (A-Cp) is (Cp) (Cp*), both Cp and Cp* having substituents on the cyclopentadienyl rings of sufficient steric bulk to restrict rotation of the cyclopentadienyl ligands such that the aforementioned symmetry conditions are satisfied. Preferable chiral racemic metallocenes of this type include bis(tricyclo[5.2.1.0¹⁶]deca-2,5-dienyl) zirconium and -hafnium dimethyl, bis((1R)-9,9-dimethyltricyclo[6.1.1.0¹⁶]deca-2,5-dienyl) zirconium dimethyl, bis(tricyclo[5.2.1.0¹⁶]deca-2,5,8-trienyl) zirconium dimethyl, bis(tricyclo[5.2.2.0¹⁶]undeca-2,5,8-trienyl) zirconium and - hafnium dimethyl and bis((1R,8R)-7,7,9)-tetramethyl[6.1.1.0¹⁶]deca-2,5-dienyl) zirconium and - hafnium dimethyl

[00194] Preferably metallocene precursors for the production of poly-alpha olefins having enhanced syndiotactic character are also those of Equation 17 where S" are independently chosen such that the two Cp-ligands have substantially different steric bulk. In order to produce a syndiotactic polymer the pattern of the groups substituted on the Cp-rings is important. Thus, by steric difference or sterically different as used herein, it is intended to imply a difference between the steric characteristics of the Cp and Cp* rings that renders each to be symmetrical With respect to the A bridging group but different with respect to each other that controls the approach of each successive monomer unit that is added to the polymer chain. The steric difference between the Cp and Cp* rings

act to block the approaching monomer from a random approach such that the monomer is added to the polymer chain in the syndiotactic configuration.

[00195] Preferable metallocene precursors for the production of syndiotactic polymers are those of Equation 17 where S" are independently chosen such that 1) the steric difference between the two Cp-ligands is maximized and 2) there remains a plane of symmetry through the metal center and the C, and C, carbon atoms of the Cp-rings in Equation 17. Thus, complexes such as Me₂C(□5- $C_2H_1/(1-fluorenvl)MMe_1$ (where M = Ti, Zr, or Hf) which possess this symmetry are preferred, and generally produce the syndiotactic polymer with higher degrees of stereoregularity than similar, but less symmetric, systems. Additionally, in the above equation, 1-fluorenyl may be substituted with 3,8-di-t-butylfluorenyl, octahydrofluorenyl or 3,3,6,6,9,9,12,12-octamethyl-4,4,5,5,10,10,11,11octahydrodibenzo[b,h]fluorene. Because pre-catalysts of this type often lose there ability to control the stereoregularity of the polymer under high temperature reaction conditions, to insure higher crystallinity in the material requires using these catalysts at lower reactor temperatures, preferably at temperatures below 80°C.

[00196] Preferred catalysts that can produce the lower molecular weight isotactic polypropylene are those described in U.S. Pat. No. 5,120,867, which is incorporated by reference herein. Any mixture of catalysts, including supported catalysts, which can be used together in a single reactor or in a series reactor configuration, that can also produce the desired polypropylene can be utilized in this invention to produce the in sinu blend. Preferred catalysts include cyclopentadienyl transition metals compounds and derivatives thereof used in conjunction with an alumoxane and/or a compatible non-coordinating anion.

[00197] Additional preferred catalysts that produce crystalline polypropylene are discussed in Chem. rev. 2000, 100, 1253-1345, which is incorporated by reference herein.